

Lead and Cadmium Contamination in Raw Milk and Some of the Dairy Products of Hamadan Province in 2013-2014

Pajohi-Alamoti M.R.*¹, Mahmoudi R², Sari A.A.¹, Valizadeh S³, Kiani R⁴

1. Department of Food Hygiene and Quality Control, Faculty of Veterinary Science, Bu-Ali Sina University, Hamedan, Iran

2. Health Products Safety Research Center, Qazvin University of Medical Sciences, Qazvin, Iran.

3. Department of Food Hygiene and Quality Control, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran

4. Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

* *Corresponding author.* Tel: +988134227350 Fax: +988134227475 E-mail: pajohi@gmail.com

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ABSTRACT

Background & Objectives: Since milk and its products constitute an important part of human diet in many parts of the world; effective procedures should be applied to improve quality and quantity of milk production, quality of its composition and milk hygiene and to minimize milk pollutants. This study aimed to determine concentration of lead and cadmium in milk and some dairy products of Hamadan markets and compare with international standard levels.

Methods: In the present cross-sectional study, 190 samples of raw cow milk, raw sheep milk, raw goat milk, yogurt and white cheese (made from cow milk) produced in dairy product manufacturing centers of Hamadan province were collected during 2013-2014. Lead and cadmium residues in the samples were examined by flame atomic absorption spectroscopy.

Results: In the present study, lead levels were not higher than the licensed level and in all samples cadmium were within standard ranges. Among dairy products, the highest and lowest average concentration of lead were found in white cheese (0.325 ppm) and yogurt (0.136 ppm); respectively. In raw milk samples the highest average concentrations of lead and cadmium were found in goat raw milk with 0.223 ppm and 0.006 ppm; respectively.

Conclusion: Comparing lead and cadmium concentrations in the samples with Codex (2000) standard revealed that average lead and cadmium levels are lower than the permissible levels. The average lead in any of the samples was not higher than the allowable concentration and cadmium amount was within the permissible range for all the samples.

Keywords: Contamination; Heavy Metals; Lead; Cadmium; Milk; Dairy Products; Hamadan.